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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,315	08/29/2002	Edwin Young Call	32867W0031	7290
441	7590	01/26/2004	EXAMINER	
SMITH, GAMBRELL & RUSSELL, LLP 1850 M STREET, N.W., SUITE 800 WASHINGTON, DC 20036			BAREFORD, KATHERINE A	
			ART UNIT	PAPER NUMBER

1762

DATE MAILED: 01/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/089,315

Applicant(s)

CALL, EDWIN YOUNG

Examiner

Katherine A. Bareford

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-7 and 9-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

Claims 3 and 8 are canceled

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8/02 (2 pages) 6) ☐ Other: _____

DETAILED ACTION

1. The Examiner notes the preliminary amendment filed October 22, 2003. The application has been examined based on this preliminary amendment.

Specification

2. The disclosure is objected to because of the following informalities: at page 1 of the specification, applicant should indicated that this case is a national stage application of PCT/US01/13924, filed May 1, 2001.

Appropriate correction is required.

Claim Objections

3. Claim 5 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 5 requires the coating to be applied directly to the surface. However, claim 1, from which claim 5 depends also requires the coating to be directly applied to the surface (see line 3), and thus claim 5 does not further limit claim 1.

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4. Claim 7 is objected to because of the following informalities: in claim 7, line 4, the use of a "metal wire" for spraying is described, however, on line 5 a "combustion powder thermal spray" process can be performed. This is contradictory. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-2, 5, 13-16 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by "The Application of Zn-Al Coatings to Prevent Corrosion of an Iron Boat" article (hereinafter Zn-Al article).

Zn-Al article teaches a method of protecting submerged or partially submerged marine surfaces, such as boat hulls. page 877 and 880. The protection method protects marine surfaces from bio-fouling without external electrical power. See page 878 ("corrosion test of sprayed coating" and "appearance" sections). The surface is directly sprayed with a zinc based alloy coating (Zn-Al) produced by a flame spraying (this would be either a combustion wire or powder process, due to the "combustion" of gases to provide the flame for the flame spraying) thermal spray process. See page 877 ("spraying" section and figure 2). This provides a protective coating of the zinc based alloy on the surface to provide protection to the surface. Page 877 and 880.

Claim 2: the coating is free of tributyltin (it is 87 % Zn and 13 % Al). page 877.

Claim 5: the coating is applied directly to the surface. Page 877 ("spraying" section and figure 2).

Claim 13: Zn-Al article also teaches a method for cathodically protecting surfaces of submerged or partially submerged metallic marine structures by thermally spraying the surfaces with a zinc based alloy coating. Page 877 and 880 and see page 878 ("corrosion test of sprayed coating" section).

Claim 14: the structure can be a hull of a ship. Page 877.

Claims 15, 16 and 18: a marine structure submerged or partially submerged in water having been coated as in claim 1 is provided. See page 877 and 880.

7. Claims 1-2, 5-6, 13-16 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Goldheim (US 3097932)

Goldheim teaches a method of protecting submerged or partially submerged marine surfaces, such as boat hulls. Column 1, lines 5-15. The protection method protects marine surfaces from bio-fouling without external electrical power. Column 1, lines 5-15 and column 2, lines 5-35. The surface is directly sprayed with a zinc coating produced by a flame spraying (this would be either a combustion wire or powder process, due to the "combustion" of gases to provide the flame for the flame spraying) thermal spray process. Figure 1 and column 1, lines 35-45 (the first layer of zinc is applied directly to the surface). This provides a protective coating of the zinc on the surface to provide protection to the surface. Figure 1 and column 2, lines 25-35.

Claim 2: the coating is free of tributyltin (it is all zinc). Column 1, lines 40-50.

Claim 5: the coating is applied directly to the surface. Figure 1 and column 1, lines 35-45 (the first layer of zinc is applied directly to the surface).

Claim 6: the surface can be plastic or wood. Column 1, lines 15-20.

Claim 13: Zn-Al article also teaches a method for cathodically protecting surfaces of submerged or partially submerged metallic marine structures by thermally spraying the surfaces with a zinc based alloy coating. Column 1, lines 35-45 and column 2, lines 5-35 (the application of the zinc based coating).

Claim 14: the structure can be a hull of a ship. Column 1, lines 5-15.

Claims 15, 16 and 18: a marine structure submerged or partially submerged in water having been coated as in claim 1 or 13 is provided. See column 1, lines 5-15 and column 2, lines 5-35.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 4, 7, 9-12, 17, 19- 20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over "The Application of Zn-Al Coatings to Prevent Corrosion of an Iron Boat" article (hereinafter Zn-Al article).

Zn-Al article, as discussed in the 35 USC 102(b) rejection using Zn-Al article above, teaches all the features of these claims except (1) the specific steel substrate (claim 4, 20), (2) the specific washing, blasting process (claim 7), (3) the multiple layers of thermal spraying (claim 9), (4) the amount of the zinc in the coating depends on the surfaces to be coated (claim 11, 19), and (5) the propeller (claim 17).

Zn-Al article does teach applying a sealer on top of the thermal spray coating, as in claim 10. page 877. Zn-Al article also teaches that the coating can be 87% zinc, as in claim 11. page 877. Zn-Al article also teaches that the coating can contain aluminum, as in claims 12 and 19. page 877. Zn-Al article teaches that the coating provides both corrosion and bio-fouling protection, as in claim 19. Pages 877 and 880. Zn-Al article also teaches that the substrate can be steel (claims 4, 20). Page 877. Zn-Al article also teaches that the substrate is prepared for thermal spraying by degreasing followed by blast cleaning with steel grit to remove rust and scale (claim 7). Page 877.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zn-Al article to (1) use a carbon steel or stainless steel substrate with an expectation of producing a desirable coated article, because Zn-Al article teaches that the substrate is a steel substrate with no limitation on the specific steel used, and it is the Examiner's position that one of ordinary skill in the art knows that carbon steel and stainless steels are well known forms of steel. It would further have been obvious to modify Zn-Al article to (2) wash with water to remove soluble materials and blast the surface to white metal before thermal spraying with an expectation of producing a desirable coated article, because Zn-Al article teaches

degreasing and grit blasting to remove rust and scale before thermal spraying, and it is the Examiner's position that it is well known in the art of degreasing and grit blasting before thermal spraying to degrease by washing in water to remove material on the substrate and to grit blast to white metal when removing rust and scale. It would further have been obvious to (3) modify Zn-Al article to spray multiple layers to achieve the desired coating thickness with an expectation of achieving a desirable coated product, because Zn-Al article teaches spraying to a desired minimum thickness (see page 877) and it is the Examiner's position that coating multiple layers (i.e. multiple passes of the spray gun) is well known in the thermal spraying art in order to achieve the desired build up of thickness into the desired range. It would further have been obvious to modify Zn-Al article to (4) optimize the amount of Zn in the coating based on the specific substrate used so as to achieve the optimum final product protection, because Zn-Al article teaches a test of a specific example of Zn-Al, and further indicates (at page 880) that further investigation is to be performed, indicating the desire to optimize the specific coating used. It would further have been obvious to modify Zn-Al article to (5) apply the coating system to a propeller so as to produce a protected propeller, because Zn-Al article teaches a coating to prevent corrosion and fouling, and propellers would be a marine surface that would be desirable to protect from corrosion and fouling so as to prolong their useful economic life. The Examiner notes as to claim 7, that both a powder and wire spray process is acceptable although the claim also claims the use of a wire. Due to the conflict, the Examiner understands the claims to allow either powder or wire, which would overlap with the general teaching of flame spraying in Zn-Al article.

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10. Claims 6 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zn-Al article as applied to claims 1-2, 4-5, 7, 9-20 and 23 above, and further in view of Goldheim (US 3097932).

Zn-Al article teaches or suggests all the features of these claims except the plastic or wood substrate.

However, Goldheim teaches applying antifouling zinc based coatings to a marine substrate by a process that includes flame spraying a layer of zinc to the surface. See column 1, lines 5-20 and 35-45. Goldheim also teaches that it is known for the marine surface to be steel or wood or plastic. Column 1, lines 15-20.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zn-Al article to use a substrate of wood or plastic as well as steel as suggested by Goldheim so as to provide desirable protected surfaces, because Zn-Al article teaches protecting a marine article of steel by flame spraying a zinc alloy coating on the surface and Goldheim teaches that marine surfaces that need protecting and can have a zinc layer flame sprayed on them are plastic and wood surfaces.

11. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zn-Al article as applied to claims 1-2, 4-5, 7, 9-20 and 23 above, and further in view of Pedetour (US 5706866).

Zn-Al article teaches or suggests all the features of this claim except the electric arc thermal spray process.

However, Pedeutour teaches that a conventional method of spray coating a zinc-aluminum alloy on an iron based substrate to be followed by a sealing layer is by electric arc spraying. See column 1, line 60 through column 2, line 10 and column 2, lines 30-50.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zn-Al article to electric arc spray the Zn-Al as suggested by Pedeutour so as to provide a desirably porous surface for applying the sealant, because Zn-Al article teaches protecting a marine article of iron based material by spraying a zinc alloy coating on the surface and then sealing the coating and Pedeutour teaches it is desirable to electric arc spray a zinc alloy coating on an iron based substrate that it to be further coated with sealant.

12. Claims 4, 10 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldheim (US 3097932).

Goldheim, as discussed in the 35 USC 102(b) rejection using Goldheim, teaches all the features of these claims except (1) the specific steel substrate (claim 4), and (2) the propeller (claim 17).

Goldheim does teach applying a sealer system on top of the thermal spray coating, as in claim 10. figures 2-3 and column 45-55. Goldheim also teaches that the substrate can be steel (claim 4). Column 1, lines 15-20.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Goldheim to (1) use a carbon steel or stainless steel substrate with an expectation of producing a desirable coated article, because Goldheim teaches that the substrate can be a steel

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substrate with no limitation on the specific steel used, and it is the Examiner's position that one of ordinary skill in the art knows that carbon steel and stainless steels are well known forms of steel. It would further have been obvious to modify Goldheim to (2) apply the coating system to a propeller so as to produce a protected propeller, because Goldheim teaches a coating to prevent fouling of various marine surfaces (see column 1, lines 5-15), and propellers would be a marine surface that would be desirable to protect from fouling so as to prolong their useful economic life.

13. The Examiner notes Metals Handbook, Ninth Edition, Volume 5, "Surface Cleaning, Finishing, and Coating", page 365 describes electric arc spray and flame spray thermal spray coatings and notes that flame spray is a combustion process.

Response to Arguments

14. Applicant's arguments with respect to claims 1-2, 4-7 and 9-23 have been considered but are moot in view of the differing grounds of rejection.

Applicant has provided arguments as to various references and a declaration by applicant of Feb. 3, 2003, which the Examiner has reviewed. However, the Examiner has cited in the present Office Action references to Zn-Al article, Goldheim and Pedetour, in the 35 USC 102 and 103 rejections above as to the various claimed features of the invention, and none of these references are discussed by applicant in the arguments or in the declaration.


Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:30-4:00) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on (571) 272-1415. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1700.


KATHERINE A. BAREFORD
PRIMARY EXAMINER
GROUP 1400-1700